AMENDMENTS TO THE CLAIMS

Please **AMEND** the claims as indicated in the following listing of claims, which replaces all prior versions:

1. (canceled)

2. (currently amended) A method for creating a patient-specific template from at least one record of electrographic signal data stored by an implantable device, the method comprising the steps of:

uploading the at least one record of electrographic signal data from the implantable device to an external apparatus;

processing the at least one record and an event annotation to generate at least one parameter;

forming the patient-specific template from the at least one parameter; and

~~The method for developing a patient specific template of claim 1, further comprising the step of~~ downloading the patient-specific template from the external apparatus to the implantable device.

3. (currently amended) The method for developing a patient-specific template of claim ~~1~~ 2, wherein the patient-specific template comprises a detection template.

4. (currently amended) The method for developing a patient-specific template of claim ~~1~~ 2, wherein the patient-specific template comprises a prediction template.

5. (currently amended) The method for developing a patient-specific template of claim ~~1~~ 2, wherein forming the patient-specific template comprises creating a data structure including at least one data item representative of the at least one parameter.

6. (currently amended) The method for developing a patient-specific template of claim ~~1~~ 2, further comprising the step of creating the event annotation by annotating at least one event in the at least one record.

7. (original) The method for developing a patient-specific template of claim 6, wherein the step of creating the event annotation comprises the steps of:

viewing the at least one record of electrographic signal data; and

indicating a start time of the event with the event annotation.

8. (original) The method for developing a patient-specific template of claim 7, wherein the step of creating the event annotation further comprises the step of indicating an end time of the event with the event annotation.

9. (original) The method for developing a patient-specific template of claim 6, wherein the step of creating the event annotation comprises the steps of:

obtaining data representative of an event log containing an event entry; and

indicating a start time of the event with the event annotation by processing the event entry.

10. (original) The method for developing a patient-specific template of claim 9, wherein the step of creating the event annotation further comprises the steps of:

viewing the at least one record of electrographic signal data; and

modifying the event annotation to refine the start time of the event.

11. (currently amended) The method for developing a patient-specific template of claim ~~1~~ 2, further comprising the step of augmenting the at least one record of electrographic data with an artificial data record.

12. (original) The method for developing a patient-specific template of claim 11, wherein the augmenting step comprises the steps of:

transforming a subset of the at least one record of electrographic data to create an additional artificial data record; and

adding the artificial data record to the at least one record prior to the developing step.

13. (original) The method for developing a patient-specific template of claim 12, wherein the transforming step comprises adjusting a playback speed of the subset.

14. (original) The method for developing a patient-specific template of claim 12, wherein the transforming step comprises adjusting an amplitude of the subset.

15. (original) The method for developing a patient-specific template of claim 12, wherein the transforming step comprises adding a noise component to the subset.

16. (original) The method for developing a patient-specific template of claim 15, wherein the subset represents baseline electrographic signal data, and wherein the noise component includes artificially generated noise, stereotypical environmental noise, or a noise record from another patient.

17. (original) The method for developing a patient-specific template of claim 15, wherein the subset represents event-containing electrographic signal data, and wherein the noise component includes artificially generated in-band noise.

18. (currently amended) The method for developing a patient-specific template of claim ~~1~~ 2, wherein the step of developing a template comprises the steps of:

selecting a set of device parameters; and

testing the set of device parameters on at least one test record.

19. (original) The method for developing a patient-specific template of claim 18, wherein the set of device parameters comprises at least one detection parameter.

20. (original) The method for developing a patient-specific template of claim 18, wherein the set of device parameters comprises at least one prediction parameter.

21. (original) The method for developing a patient-specific template of claim 18, wherein the set of device parameters comprises at least one signal pre-processing parameter.

22. (original) The method for developing a patient-specific template of claim 18, further comprising the step of choosing a detection algorithm.

23. (original) The method for developing a patient-specific template of claim 18, further comprising the step of selecting the at least one test record as a subset of the at least one record of electrographic signal data.

24. (original) The method for developing a patient-specific template of claim 18, wherein the step of selecting a set of device parameters is performed automatically.

25. (original) The method for developing a patient-specific template of claim 18, wherein the step of testing the detection parameters comprises the steps of:

identifying a plurality of performance factors on the at least one test record;

combining the plurality of performance factors into a performance metric.

26. (original) The method for developing a patient-specific template of claim 18, wherein the step of testing the detection parameters comprises the steps of:

measuring a detection latency;

identifying any correct positive detections on the at least one record;

identifying any false positive detections on the at least one record;

identifying any false negative detections on the at least one record;

combining the detection latency, the correct positive detections, the false positive detections, and the false negative detections into a performance metric.

27. (original) The method for developing a patient-specific template of claim 26, further comprising the steps of:

identifying a false positive detection occurring before the event annotation;

changing the false positive detection into a predictive correct positive detection; and

calculating a negative detection latency between the predictive correct positive detection and the event annotation.

28. (original) The method for developing a patient-specific template of claim 18, wherein the step of testing the detection parameters comprises the steps of:

identifying any point correct positive detections on the at least one test record;

measuring a detection latency;

identifying any block correct positive detections on the at least one record;

identifying any point false positive detections on the at least one record;

identifying any block false positive detections on the at least one record;

scaling the number of block false positives by a total block false positive duration;

identifying any block false negative detections on the at least one record;

combining the point correct positive detections, the detection latency, the block correct positive detections, the point false positive detections, the scaled block false positive detections, and the block false negative detections into a performance metric.

29. (original) The method for developing a patient-specific template of claim 18, further comprising the step of repeating the selecting step and the testing step.

30. (original) The method for developing a patient-specific template of claim 18, further comprising the step of saving the detection parameters.

31. (currently amended) The method for developing a patient-specific template of claim ~~1~~ 2, wherein the step of developing a template comprises performing a greedy line search.

32. (original) The method for developing a patient-specific template of claim 31, wherein performing a greedy line search comprises the steps of:

selecting a variable parameter from a working parameter set;

testing the working parameter set on at least one test record;

adjusting a value of the variable parameter;

repeating the testing and adjusting steps over a range of values of the variable parameter; and

identifying a desired value of the variable parameter;

33. (original) The method for developing a patient-specific template of claim 32, further comprising the step of selecting the at least one test record as a subset of the at least one record of electrographic signal data.

34. (original) The method for developing a patient-specific template of claim 32, further comprising the step of incorporating the desired value of the variable parameter into the working parameter set.

35. (original) The method for developing a patient-specific template of claim 32, further comprising the steps of:

selecting an initial parameter set; and

deriving the working parameter set from the initial parameter set.

36. (original) The method for developing a patient-specific template of claim 35, wherein selecting an initial parameter set comprises the steps of:

employing at least one heuristic algorithm to generate at least one initial parameter; and

forming an initial parameter set from the at least one initial parameter.

37. (original) The method for developing a patient-specific template of claim 32, further comprising the step of selecting a termination criterion.

38. (original) The method for developing a patient-specific template of claim 37, further comprising the step of comparing the working parameter set to a stored parameter set.

39. (original) The method for developing a patient-specific template of claim 38, wherein the step of comparing the working parameter set to a stored parameter set comprises the steps of:

identifying a plurality of performance factors on the at least one test record;

combining the plurality of performance factors into a working performance metric; and

comparing the working performance metric to a stored performance metric corresponding to the stored parameter set.

40. (original) The method for developing a patient-specific template of claim 39, further comprising the step of replacing the stored parameter set with the working

parameter set if the working performance metric is better than the stored performance metric.

41. (original) The method for developing a patient-specific template of claim 38, further comprising the step of determining whether the termination criterion is met.

42. (original) The method for developing a patient-specific template of claim 37, further comprising the step of iteratively testing parameter sets to accomplish a multidimensional search by repeating the steps of selecting a parameter, testing the working parameter sets, repeating the testing and adjusting steps, and identifying a preferred parameter value.

43. (original) The method for developing a patient-specific template of claim 42, wherein the step of iteratively testing parameter sets is performed repeatedly until the termination criterion is met.

44. (original) The method for developing a patient-specific template of claim 43, wherein the termination criterion comprises a convergence bound.

45. (original) The method for developing a patient-specific template of claim 43, wherein the termination criterion comprises a maximum number of iterations.

46. (original) The method for developing a patient-specific template of claim 32, further comprising the step of converting the patient-specific template into a format recognizable by the implantable device.

47. (currently amended) The method for developing a patient-specific template of claim ~~1~~ 2, further comprising step of evaluating the template before the downloading step.

48. (original) The method for developing a patient-specific template of claim 47, wherein the evaluating step comprises determining whether the template is satisfactory by visual inspection of a simulation.

49. (original) The method for developing a patient-specific template of claim 47, wherein the evaluating step comprises the step of checking the template against a plurality of records of electrographic data.

50. (currently amended) The method for developing a patient-specific template of claim ~~1~~ 2, further comprising the step of manually refining the template before the downloading step.

51. (currently amended) The method for developing a patient-specific template of claim ~~1~~ 2, wherein the at least one record comprises electrographic data representative of a plurality of channels, and wherein the method further comprises the step of identifying a channel of interest.

52. (original) The method for developing a patient-specific template of claim 51, wherein the step of identifying a channel of interest comprises creating a processed channel from a plurality of channels in the record.

53. (currently amended) The method for developing a patient-specific template of claim ~~1~~ 2, wherein the at least one record comprises a plurality of records, and further comprising the step of dividing the plurality of records into a plurality of sets of records representing different types of data.

54. (original) The method for developing a patient-specific template of claim 53, wherein the plurality of sets of records comprises a first set of records and a second set of records, and wherein the first set of records represents event-containing electrographic signal data and the second set of records represents baseline electrographic signal data.

55. (original) The method for developing a patient-specific template of claim 54, wherein the uploading step comprises the steps of:

receiving the first set of records from storage in the implantable device; and

receiving at least a portion of the second set of records from a real-time source of electrographic data.

56. (original) The method for developing a patient-specific template of claim 55, wherein the real-time source of electrographic data is the implantable device.

57. (currently amended) The method for developing a patient-specific template of claim ~~1~~ 2, wherein the uploading step comprises the step of causing the implantable device to transmit the at least one record over a wireless link to the external apparatus.

58. (currently amended) The method for developing a patient-specific template of claim ~~1~~ 2, wherein the uploading step comprises the step of causing a database to transmit the at least one record to the external apparatus, wherein the at least one record originated in the implantable device.

59. (currently amended) The method for developing a patient-specific template of claim ~~1~~ 2, wherein the uploading step comprises the step of causing a transceiver to obtain the at least one record from the implantable device over a wireless link and transmit the at least one record over a secondary link to the external apparatus.

60. (original) The method for developing a patient-specific template of claim 59, wherein the secondary link comprises a telephone line.

61. (original) The method for developing a patient-specific template of claim 59, wherein the secondary link comprises a computer network.

62. (currently amended) The method for developing a patient-specific template of claim ~~1~~ 2, wherein the external apparatus is a programmer.

63. (currently amended) The method for developing a patient-specific template of claim ~~1~~ 2, wherein the external apparatus is a database.

64. (currently amended) A system for developing a patient-specific template for identifying neurological activity in a human patient, comprising:

an implantable device having a control module and at least one electrode adapted to receive an electrical signal from the patient's brain; and

an external apparatus capable of bi-directional communication with the implantable device;

wherein the template comprises an operational parameter and the external apparatus is adapted to transmit ~~an~~ the operational parameter to the implantable device;

wherein the implantable device is adapted to record at least one record of the electrical signal in accordance with the operational parameter and transmit the record to the external apparatus; and

wherein the external apparatus is adapted to receive and perform an operation on the record.

65. (original) The system for developing a patient-specific template of claim 64, wherein the operational parameter defines at least one specified recording start time.

66. (original) The system for developing a patient-specific template of claim 65, wherein the operational parameter further specifies at least one recording duration.

67. (original) The system for developing a patient-specific template of claim 65, wherein the operational parameter further specifies at least one recording end time.

68. (original) The system for developing a patient-specific template of claim 65, wherein the specified recording start time is recurring.

69. (original) The system for developing a patient-specific template of claim 64, wherein the electrical signal comprises a bipolar EEG signal received from two electrodes.

70. (original) The system for developing a patient-specific template of claim 64, wherein the operational parameter indicates at least one random start time.

71. (original) The system for developing a patient-specific template of claim 64, wherein the control module comprises an electronic circuit having a detection subsystem, and wherein the detection subsystem is programmable with a signal processing parameter.

72. (original) The system for developing a patient-specific template of claim 71, wherein the operational parameter comprises the signal processing parameter.

73. (original) The system for developing a patient-specific template of claim 72, wherein the external apparatus comprises a programmer.

74. (original) The system for developing a patient-specific template of claim 73, wherein the programmer is programmed with event detection template development software operative to develop a template from the record.

75. (original) The system for developing a patient-specific template of claim 74, wherein the signal processing parameter is generated by the event detection template development software.

76. (original) The system for developing a patient-specific template of claim 71, wherein the operational parameter indicates an event to be detected by the detection subsystem.

77. (original) The system for developing a patient-specific template of claim 76, wherein the operational parameter further indicates an action to be performed in response to the event.

78. (original) The system for developing a patient-specific template of claim 77, wherein the action comprises storing a record of the electrical signal.

79. (original) The system for developing a patient-specific template of claim 64, wherein the external apparatus comprises a display unit adapted to simultaneously display a plurality of records received from the implantable device.

80. (original) The system for developing a patient-specific template of claim 79, wherein the external apparatus further comprises an input device allowing a user to annotate an event in a record of the plurality of records.

81. (original) The system for developing a patient-specific template of claim 80, wherein the event comprises a clinical onset of a seizure.

82. (original) The system for developing a patient-specific template of claim 80, wherein the event comprises an electrographic onset of a seizure.

83. (original) The system for developing a patient-specific template of claim 80, wherein the event comprises an electrographic precursor to a seizure.

84. (original) The system for developing a patient-specific template of claim 80, wherein the event comprises an electrographic event predictive of a seizure.

85. (original) The system for developing a patient-specific template of claim 64, further comprising an initiating device capable of transmitting at least one code to the implantable device, wherein the implantable device is capable of receiving and acting in response to the code.

86. (original) The system for developing a patient-specific template of claim 85, wherein the initiating device is capable of being operated by the patient.

87. (original) The system for developing a patient-specific template of claim 85, wherein the initiating device comprises a magnet.

88. (original) The system for developing a patient-specific template of claim 85, wherein the initiating device comprises an external electronic device.

89. (original) The system for developing a patient-specific template of claim 85, wherein the initiating device is capable of transmitting a code representative of a command to store a timestamp of an event sensed by the patient or a code representative of a command to begin recording.